# An Overview of the Hull Husbandry Practices and Fouling-Related Voyage Characteristics of California's Commercial Fleet

Chris Scianni
Marine Invasive Species Program
California State Lands Commission
Prevention First, October 20, 2010

# Ship Biofouling in CA

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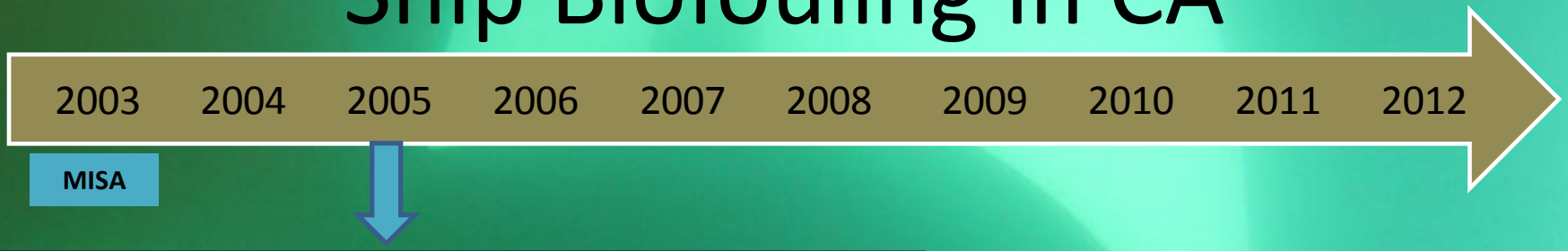
2003 2004 2005 2006 2007 2008 2009 2010 2011 2012

<u>Marine Invasive Species Act (2003)</u>
<u>Assembly Bill 433</u>

- Added PRC Section 71210.5
- Required CSLC to evaluate non-ballast water vessel vectors
  - Essentially fouling of vessel hulls, sea chests, gratings, propellers, etc.
  - In consultation with Technical Advisory Group
  - Prepare report on or before March 1, 2006

# Ship Biofouling in CA




## Fouling Technical Advisory Group

### Information Sharing

### Recommendation Development

| Workshop May 11, 2005 | Meeting #2 August 3 | Meeting #3 October 13 | Meeting #4 December 19 |
|---|---|---|---|
| Presentations/ Discussion<br><br>Information sharing inclusive of recreational fouling | Discussion: Focus on commercial vessels<br><br>Fouling risk factors<br><br>Commercial vessel maintenance frameworks | Potential management frameworks for CA:<br><br>Research?<br>Regulations?<br>Best Management Practices? | Potential Management Frameworks<br><br>Pros?<br>Cons?<br><br>Areas of Agreement |

# Ship Biofouling in CA

2003 2004 2005 2006 2007 2008 2009 2010 2011 2012

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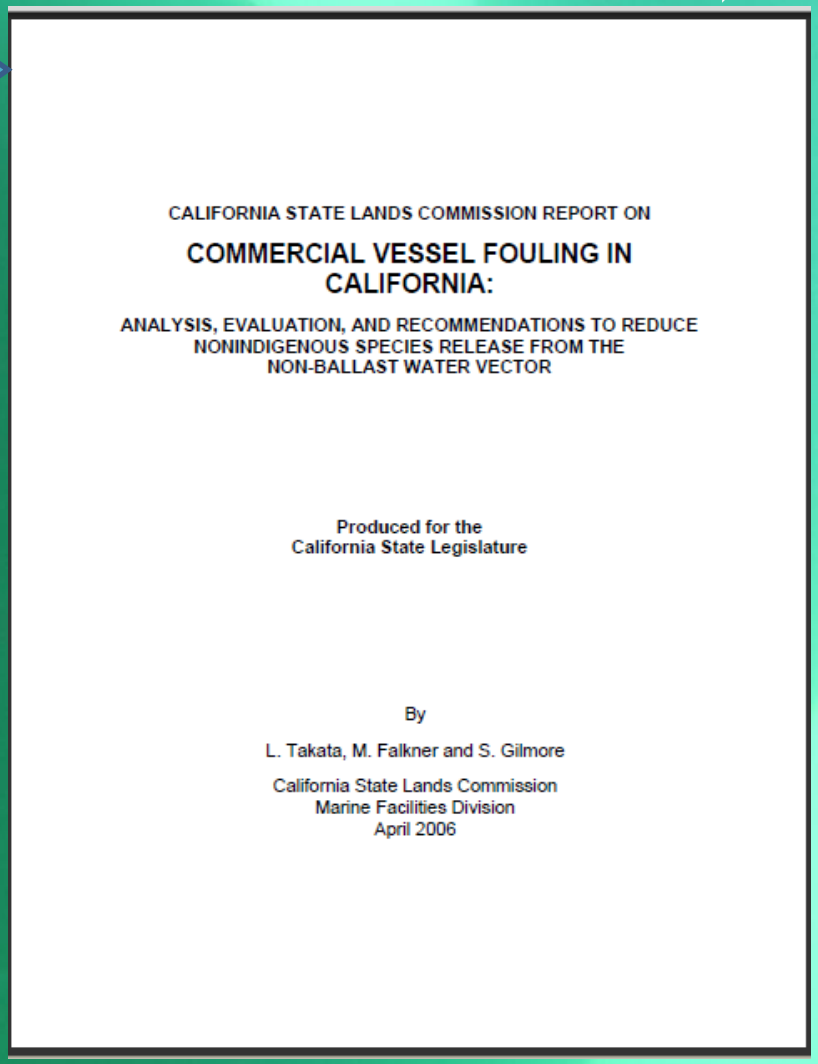
- **2006 Legislative Report**
- **Lack of data, especially for U.S. Pacific coast**
- **Limited information on hull husbandry practices**
- **Requested authority to fill information gaps**



CALIFORNIA STATE LANDS COMMISSION REPORT ON

COMMERCIAL VESSEL FOULING IN CALIFORNIA:

ANALYSIS, EVALUATION, AND RECOMMENDATIONS TO REDUCE NONINDIGENOUS SPECIES RELEASE FROM THE NON-BALLAST WATER VECTOR

Produced for the
California State Legislature

By

L. Takata, M. Falkner and S. Gilmore

California State Lands Commission
Marine Facilities Division
April 2006

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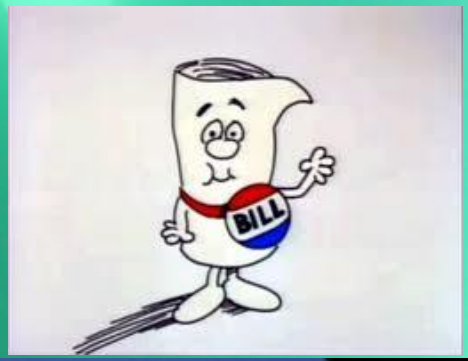
2003 2004 2005 2006 2007 2008 2009 2010 2011 2012

MISA TAG Report

## Assembly Bill 740 (2007)

- Defined "regular removal" of fouling organisms
- In-water cleaning must use best available technology economically achievable
- Expanded CSLC authority
  - Fill information gaps
    - Fund targeted research
    - Collect hull husbandry data
  - Develop and adopt regulations
    - By January 1, 2012
    - In consultation with TAG




# Ship Biofouling in CA

2003 2004 2005 2006 2007 2008 2009 2010 2011 2012

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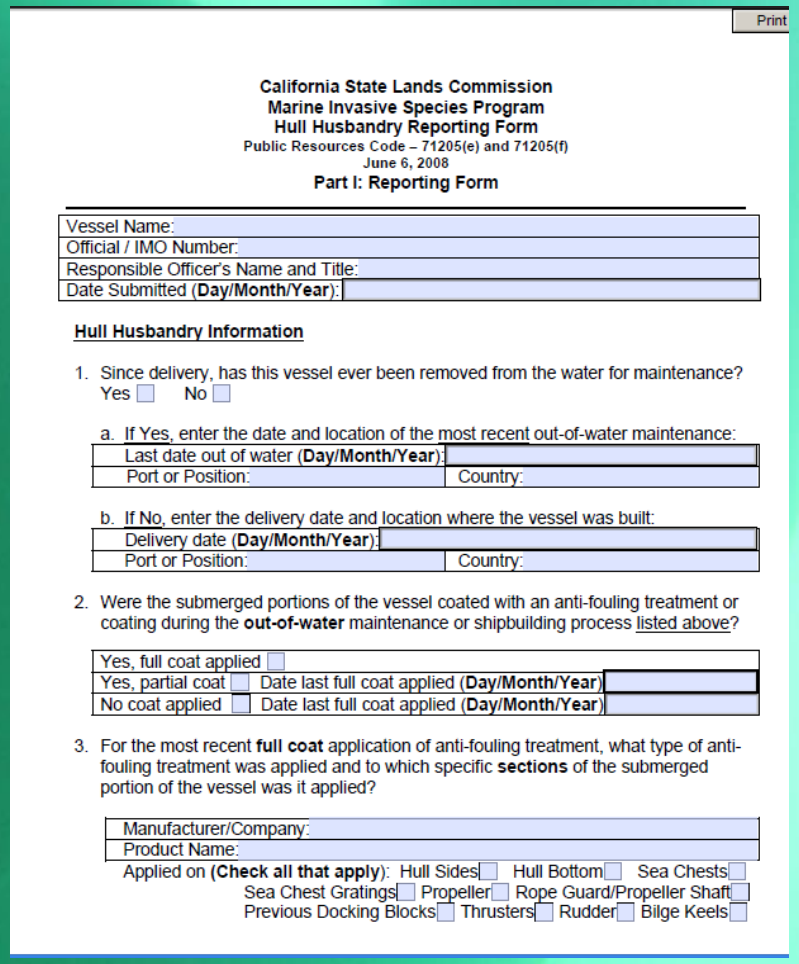
## Hull Husbandry Reporting Form

- Developed in consultation with TAG (Dec 2007)
- Distributed to industry Jan 2008
- Mandatory annual submission
- Eleven questions
- Two sections:
  - Hull husbandry information
  - Voyage characteristics



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**California State Lands Commission**
**Marine Invasive Species Program**
**Hull Husbandry Reporting Form**
Public Resources Code – 71205(e) and 71205(f)
June 6, 2008
**Part I: Reporting Form**

Vessel Name:
Official / IMO Number:
Responsible Officer's Name and Title:
Date Submitted (**Day/Month/Year**):

**Hull Husbandry Information**

1. Since delivery, has this vessel ever been removed from the water for maintenance?
   Yes ☐ No ☐

   a. If Yes, enter the date and location of the most recent out-of-water maintenance:
   Last date out of water (**Day/Month/Year**):
   Port or Position: Country:

   b. If No, enter the delivery date and location where the vessel was built:
   Delivery date (**Day/Month/Year**):
   Port or Position: Country:

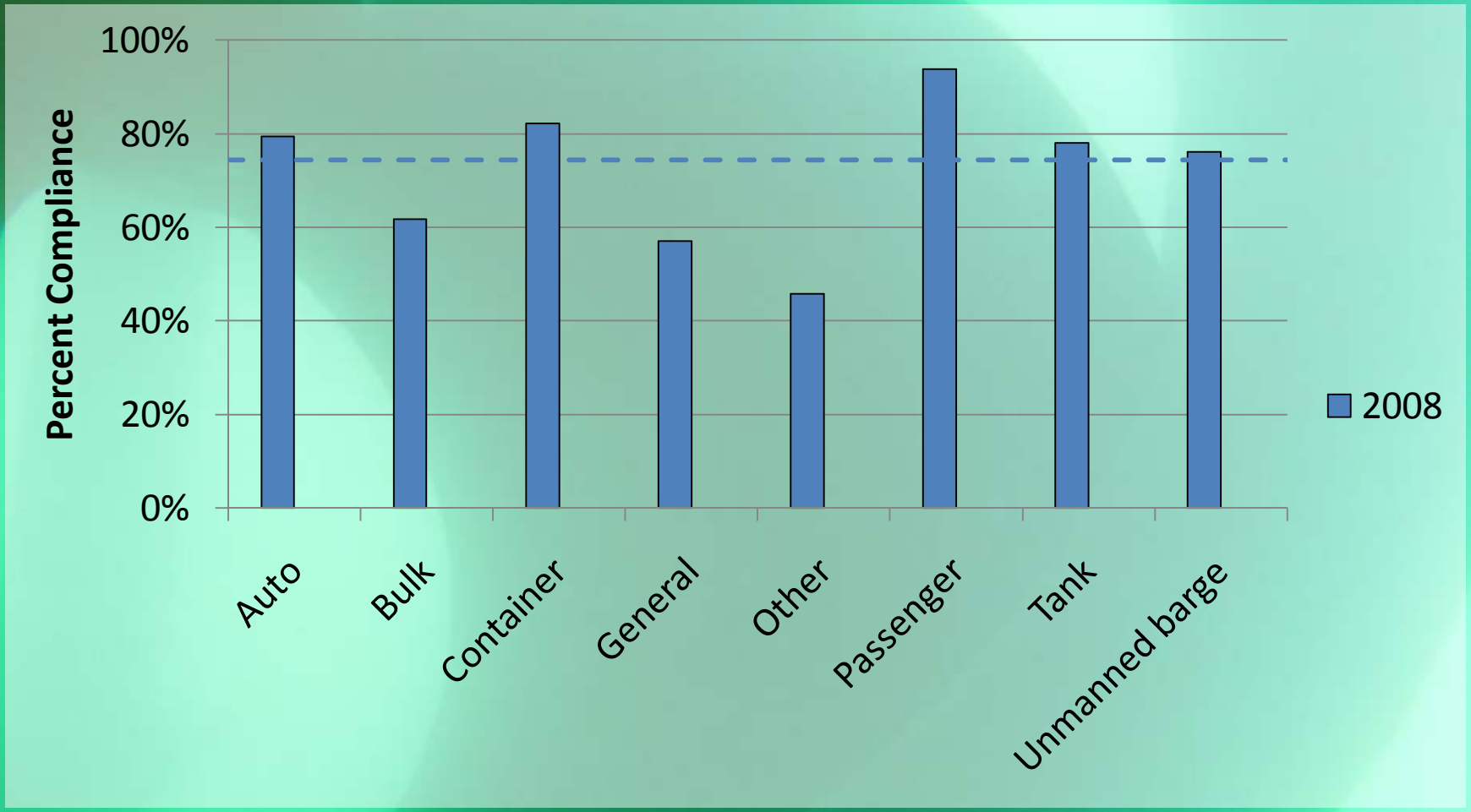
2. Were the submerged portions of the vessel coated with an anti-fouling treatment or coating during the **out-of-water** maintenance or shipbuilding process listed above?

   Yes, full coat applied ☐
   Yes, partial coat ☐ Date last full coat applied (**Day/Month/Year**)
   No coat applied ☐ Date last full coat applied (**Day/Month/Year**)

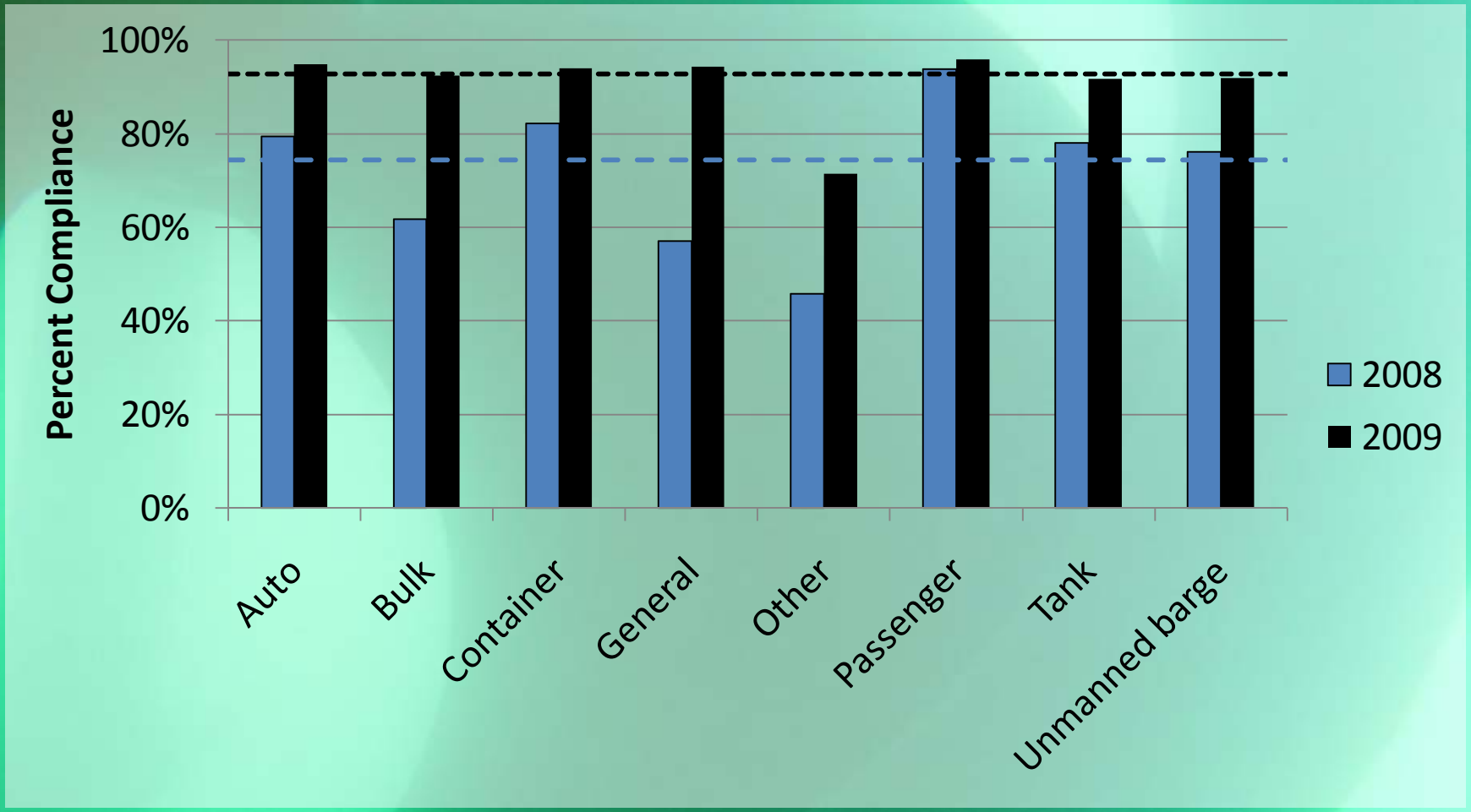
3. For the most recent **full coat** application of anti-fouling treatment, what type of anti-fouling treatment was applied and to which specific **sections** of the submerged portion of the vessel was it applied?

   Manufacturer/Company:
   Product Name:
   Applied on (**Check all that apply**): Hull Sides ☐ Hull Bottom ☐ Sea Chests ☐
   Sea Chest Gratings ☐ Propeller ☐ Rope Guard/Propeller Shaft ☐
   Previous Docking Blocks ☐ Thrusters ☐ Rudder ☐ Bilge Keels ☐

# HHRF Submission Compliance

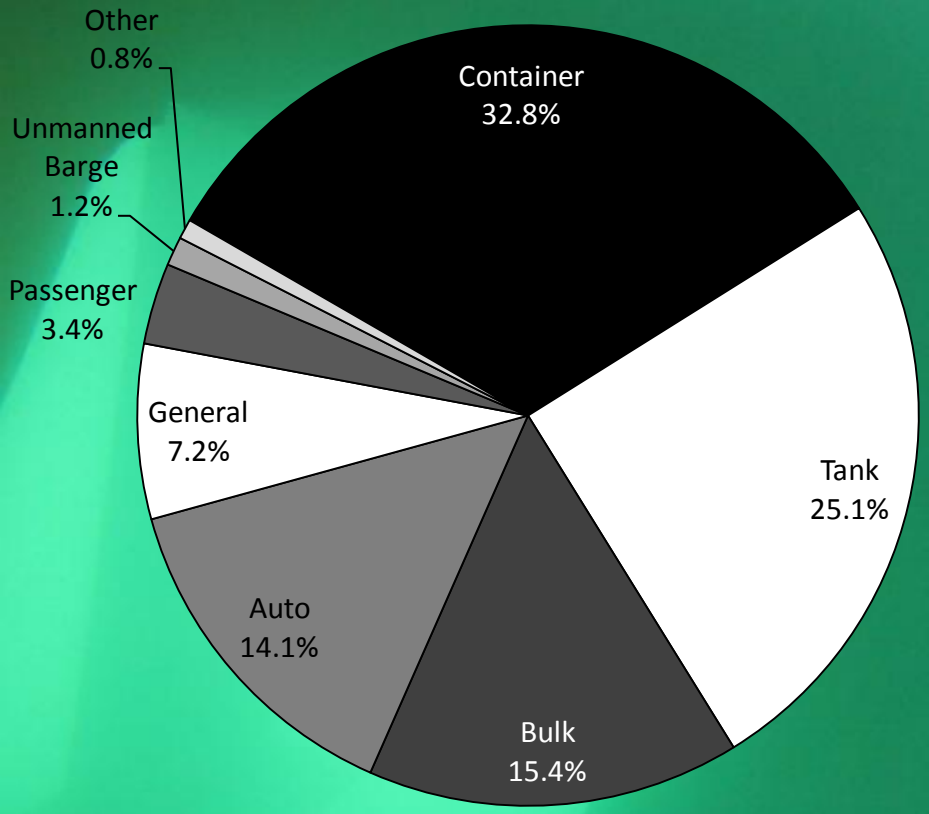


# HHRF Submission Compliance

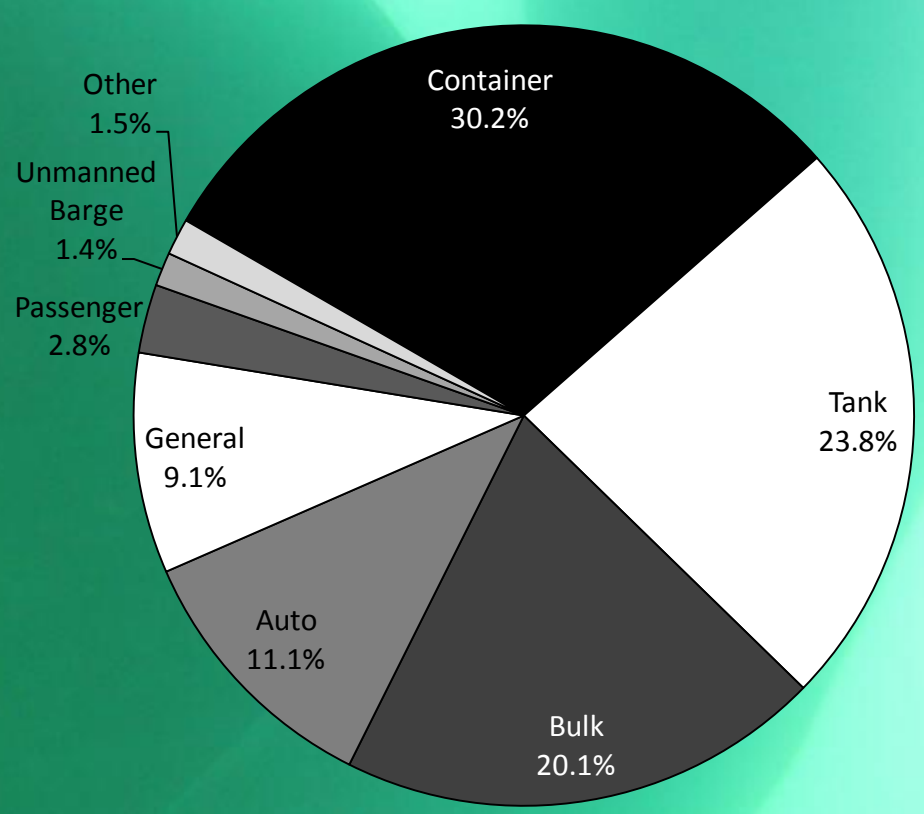


# California Vessel Population

## 2008



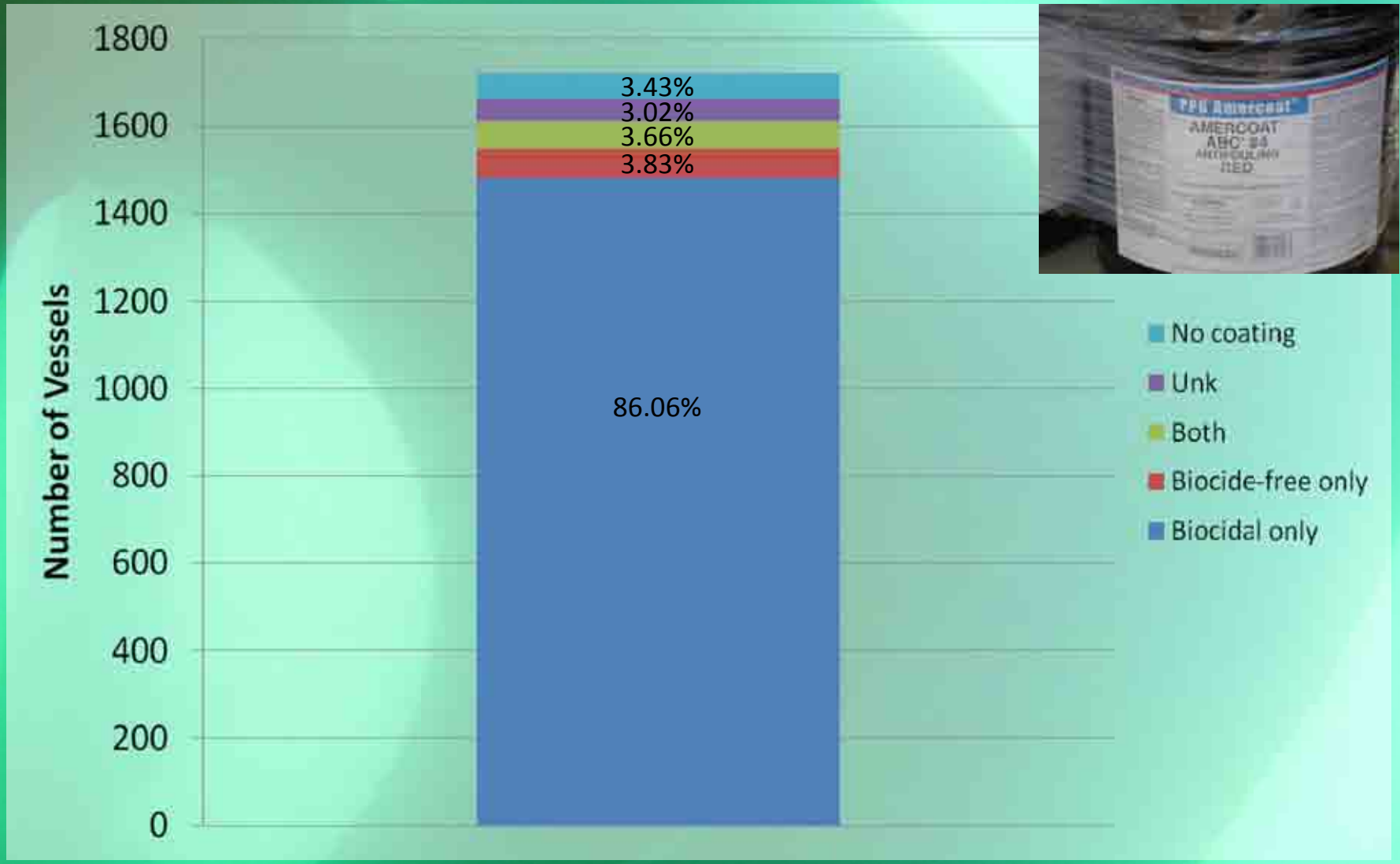

## *2009*



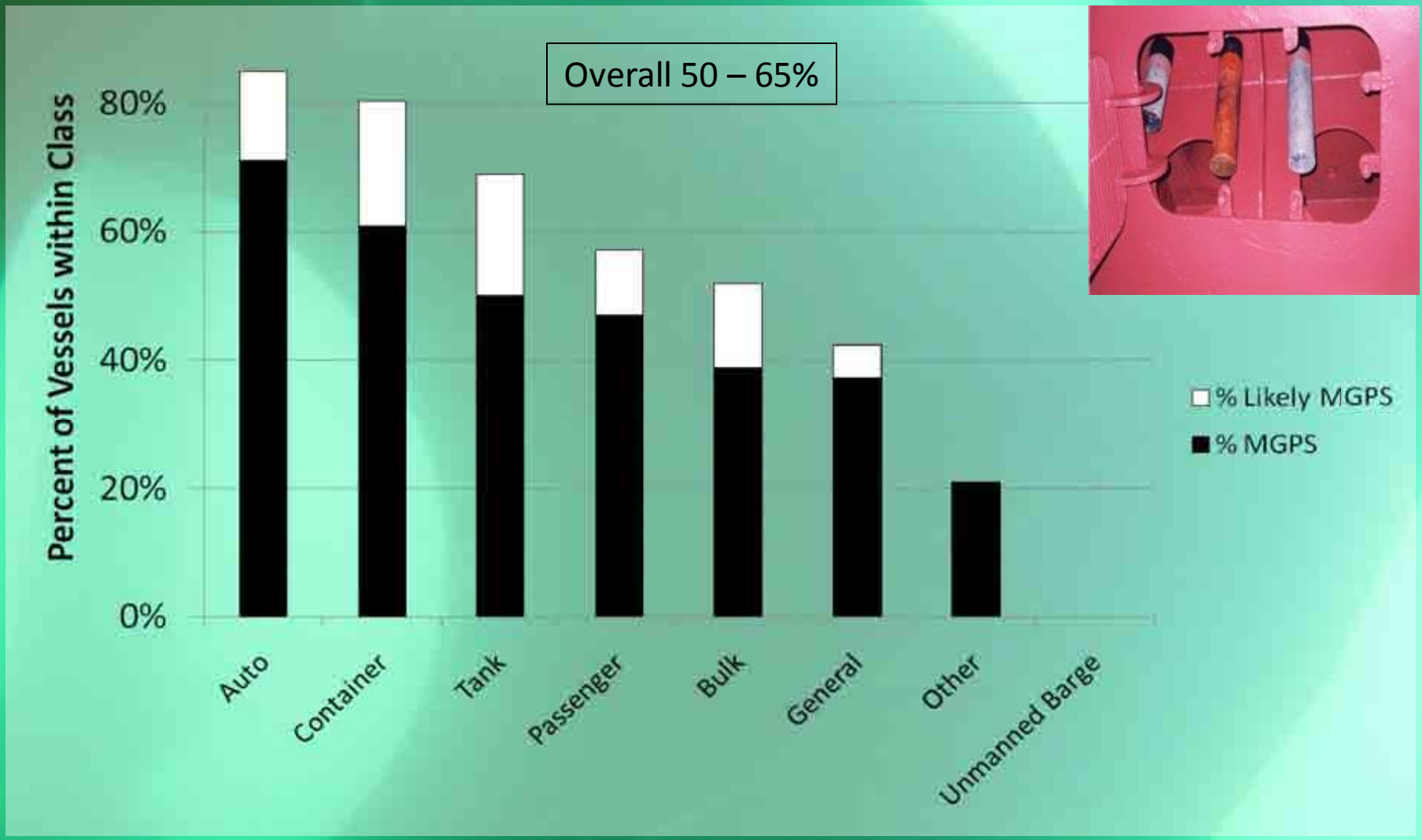
# Hull Husbandry Information

# Vessels dry docked or delivered within each of the past 5 years

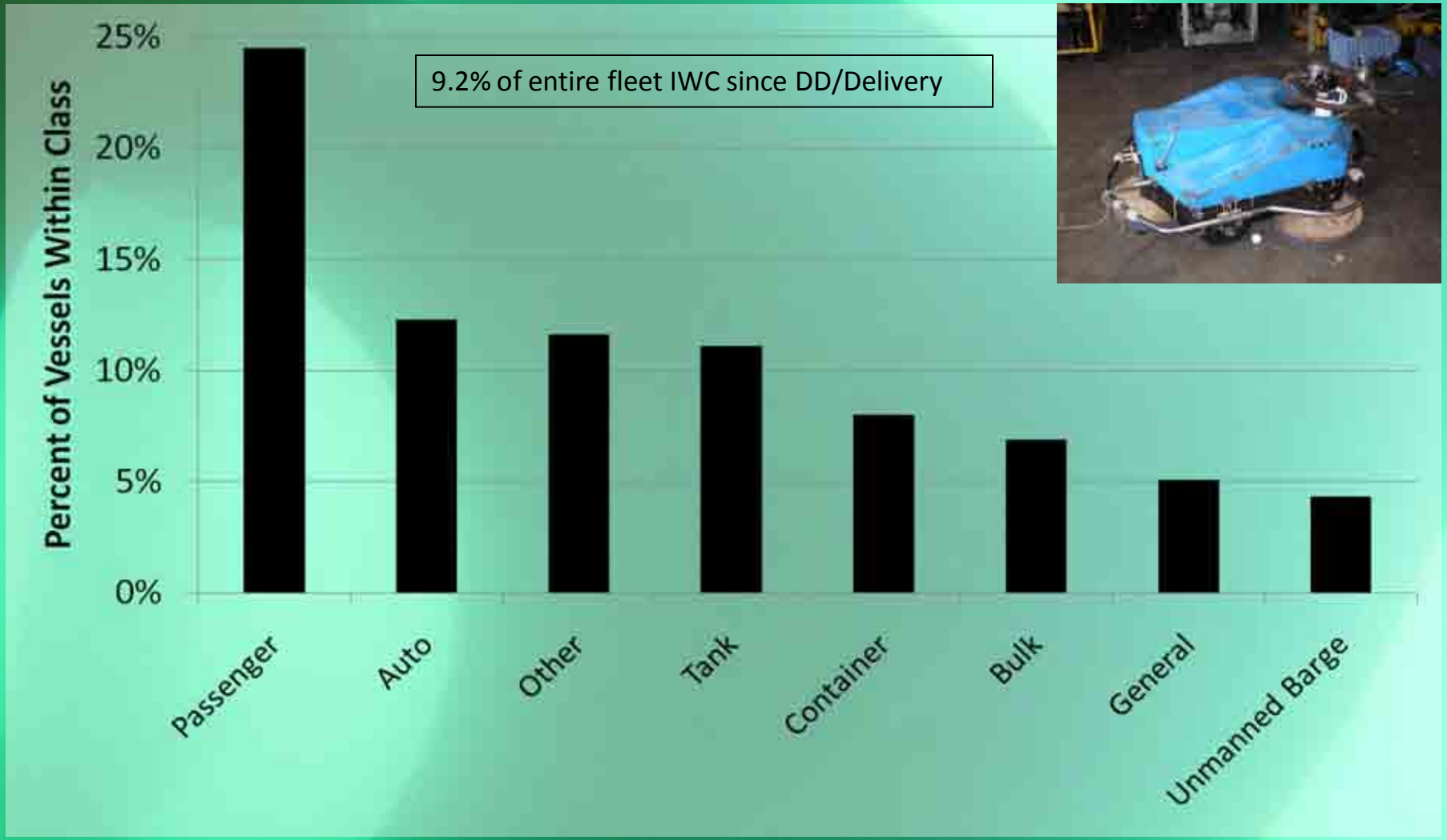
# Per Ship Antifouling Coating Use



# Percent of Vessels within Class with MGPS Installed



# In-Water Cleaning by Vessel Class

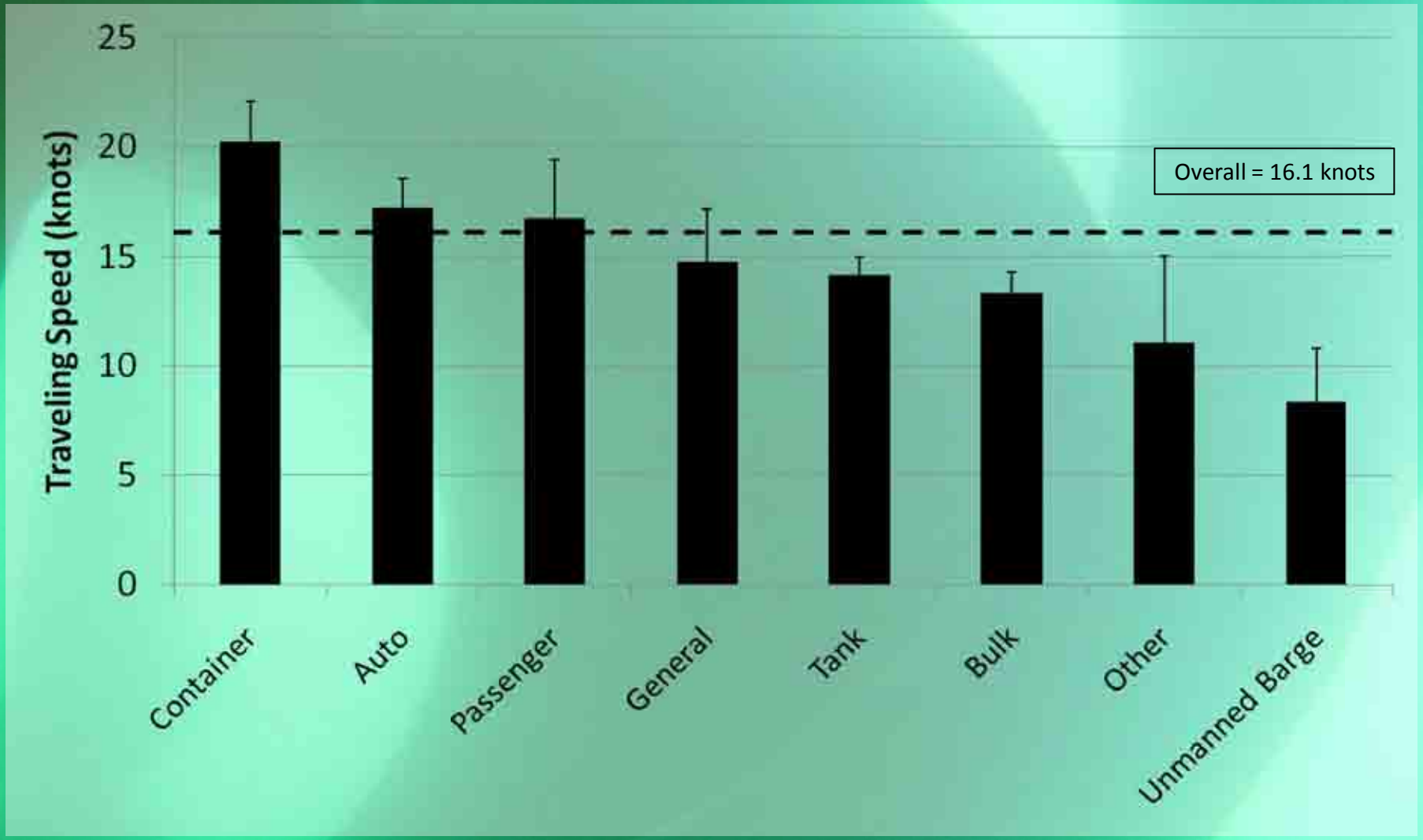


# Hull Husbandry Practices Overview

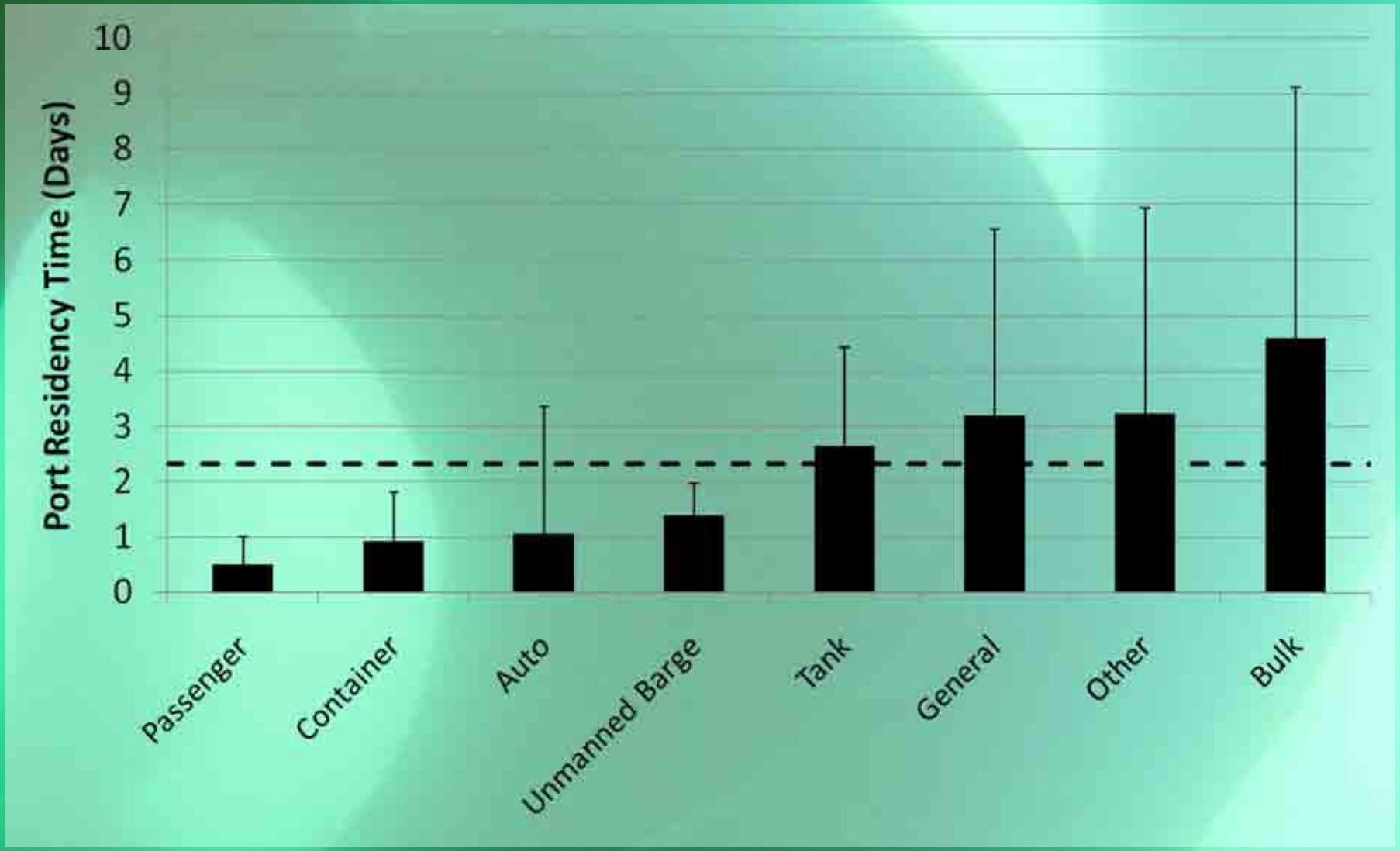
- Majority dry docked or delivered within past 2 years
- 86% of vessels used strictly biocidal AF
  - 7.5% used biocide-free AF
- 50-65% of vessels utilizing MGPS
- 10% cleaned IW since DD/Delivery
  - Including 25% of Passenger vessels
  - 6.54% were cleaned in CA waters

# Voyage Characteristics

# Mean Traveling Speed (knots)



# Mean Port Residency Time (days)



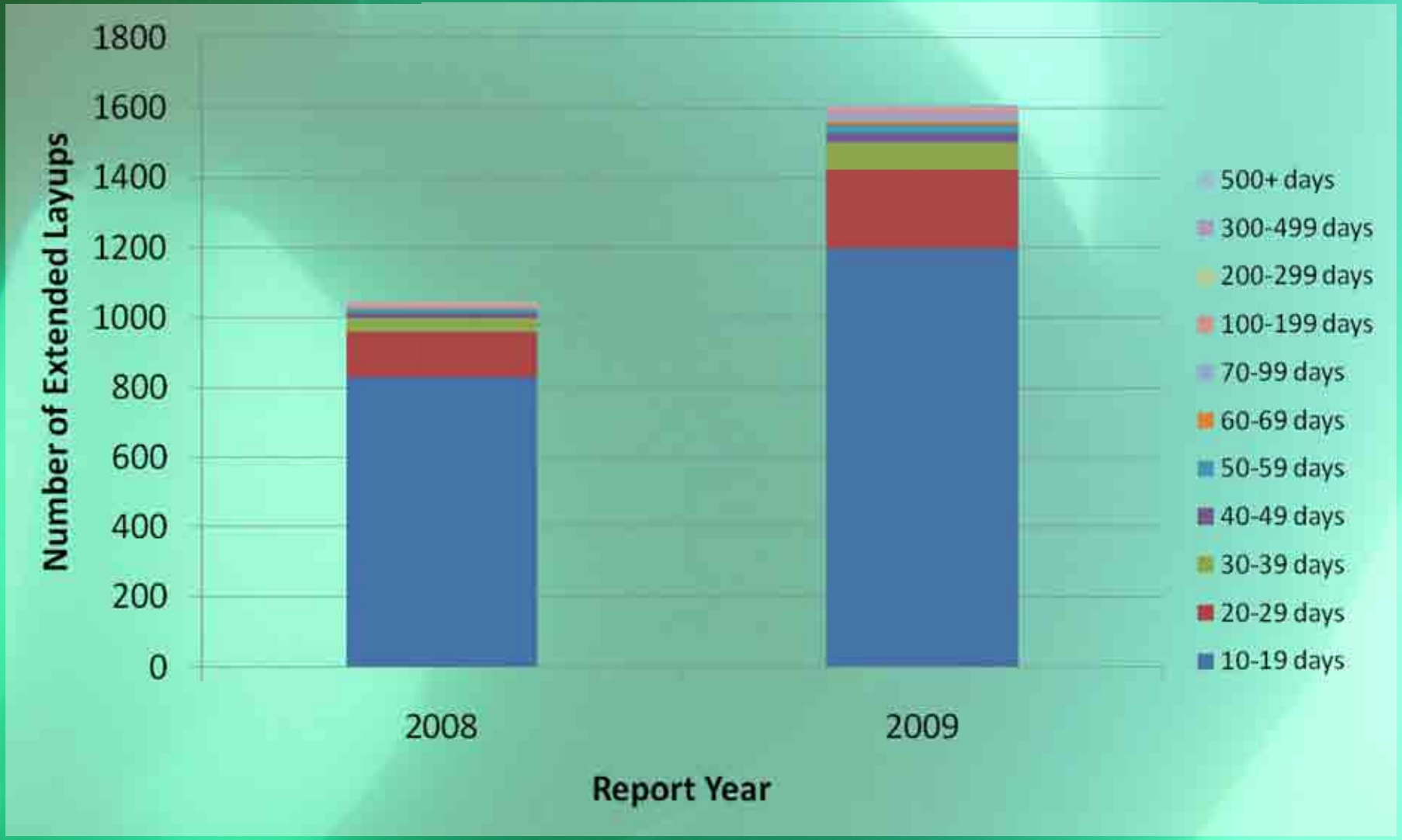
# Traveling Speed and Port Residency

- Auto, Container, & Passenger vessels all exhibited characteristics thought to result in lower potential for fouling accumulation
  - Travel at elevated speeds (16.8 knots and greater)
  - Short port residency times (average 1.06 days or shorter)

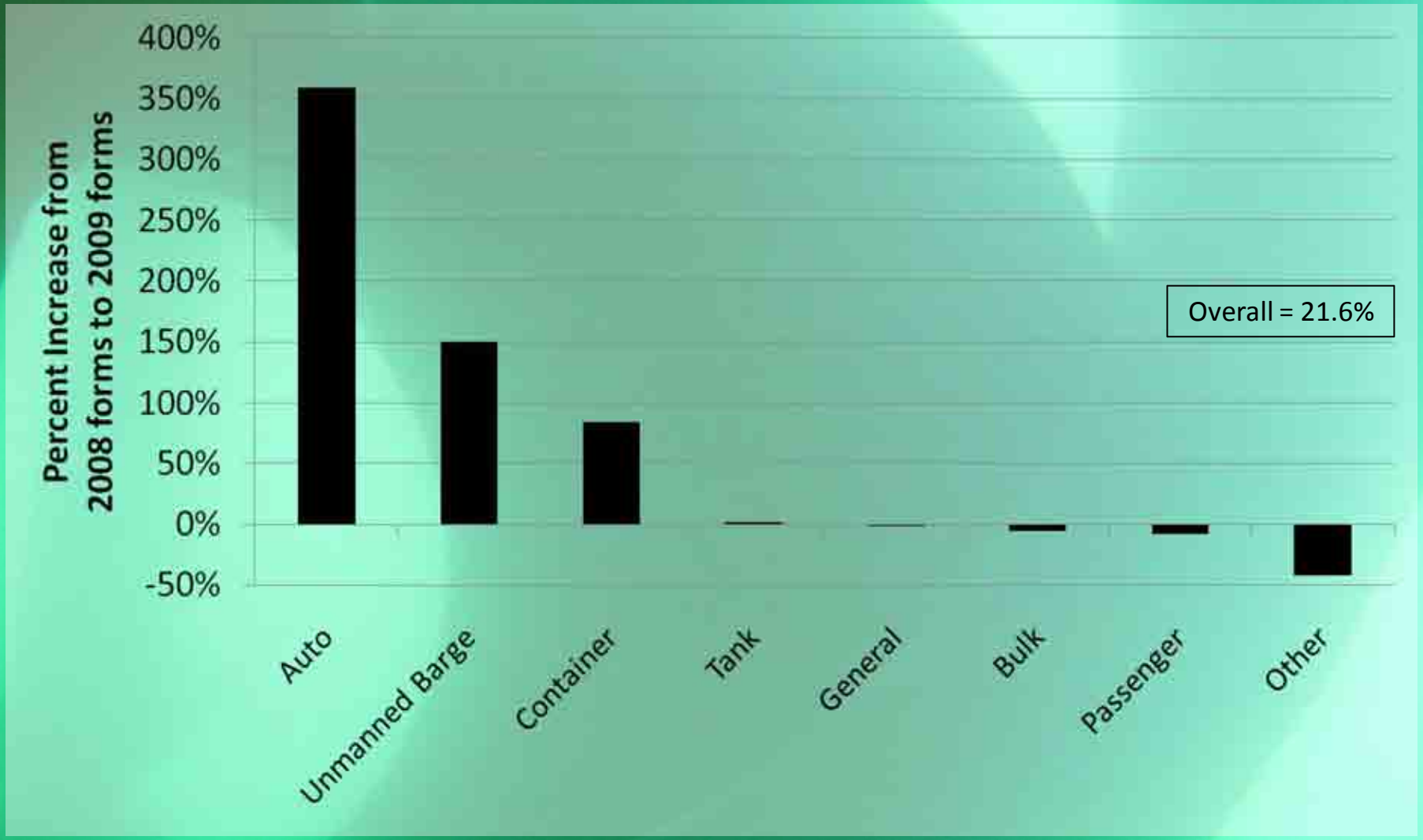
- Bulkers, and 'Other' vessels all exhibited characteristics thought to result in greater potential for fouling accumulation
  - Travel at slower speeds (averaged 13.3 knots or slower)
  - Long port residency times (average 3.2 days or greater)

Floerl and Coutts (2009)
Port of Singapore, May 2009. Images: A. Coutts, May 2009

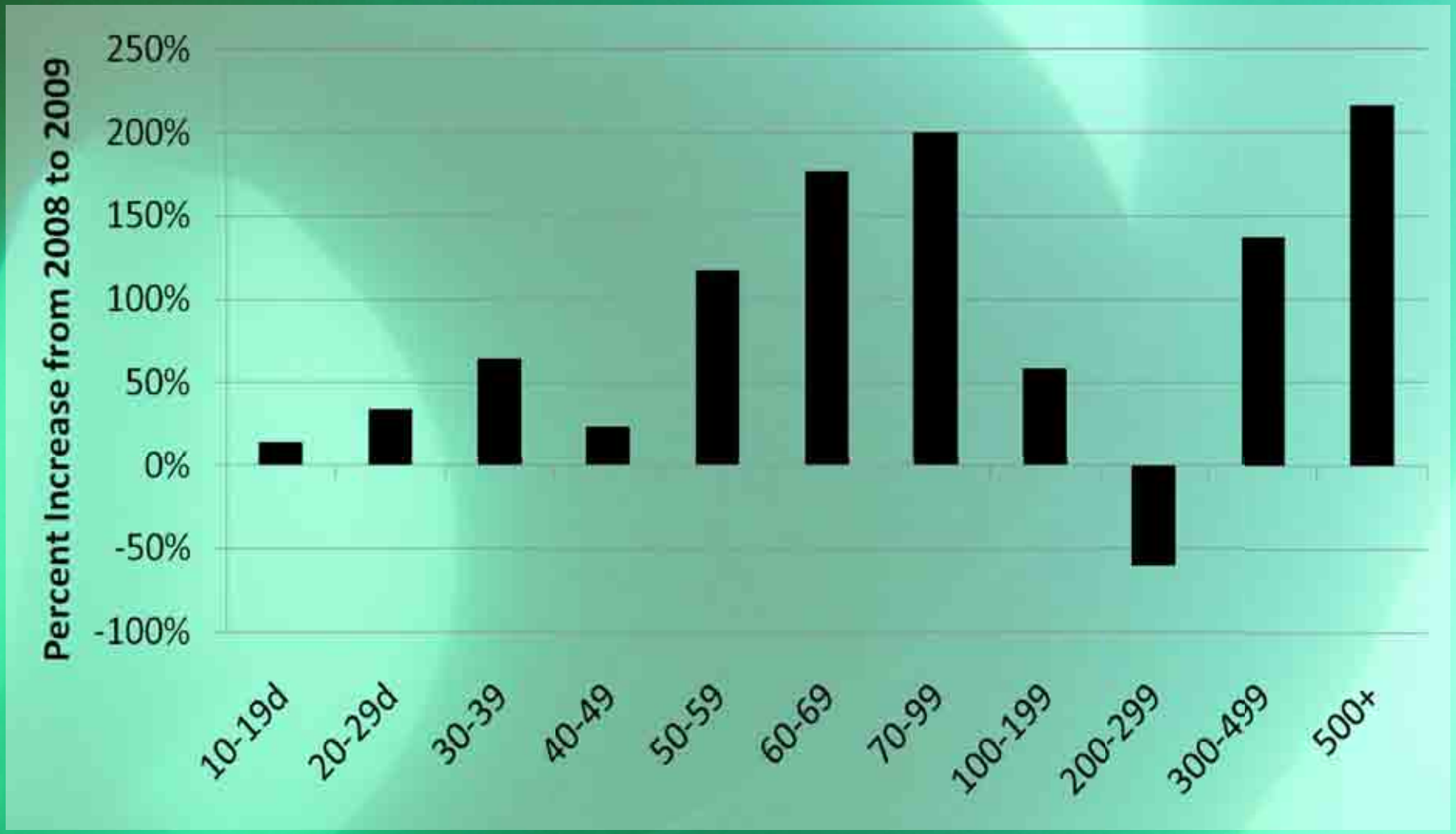
# Total Number of Extended Layups by Duration



# Percent Increase in Per Capita Extended (10+ day) Layups



# Percent Increase in Per Capita Layups of Specific Durations Reported in 2008 and 2009



# Extended Layups Overview

- Large increase in the total number of 10+ day layups
  - 21.6% on per capita basis
  - Most pronounced in Auto Carriers (360% increase), Unmanned Barges (150%), Container Vessels (84%)
- Large increase in layups of various durations
  - Most pronounced in 500+ day, 70-99 day, and 60-69 day layups

# What the Hull is Going on With CA Fleet?

- Majority of fleet recently (2-3 years) dry docked or delivered (i.e. young AF coatings)
- Speeds and port residency times suggest potential gradient of perceived risk of fouling accumulation
- Large increases in number and duration of extended layups
  - Especially for Auto, Container vessels, Unmanned Barges

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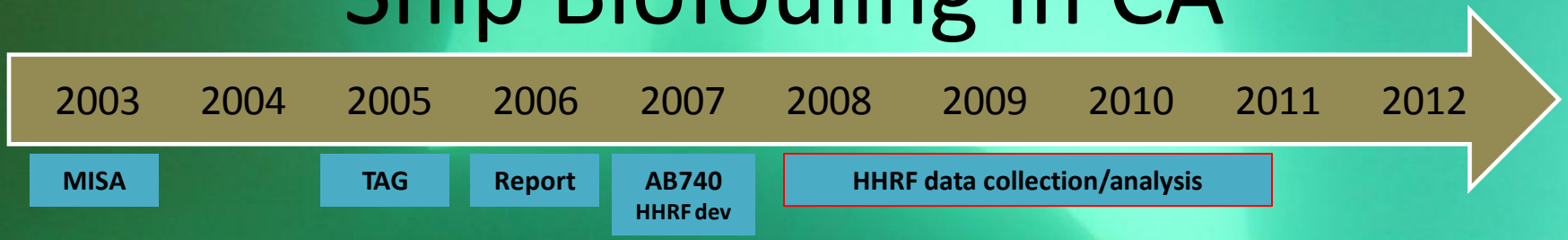

# Ship Biofouling in CA

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**MISA** | **TAG** | **Report** | **AB740** HHRF dev | **HHRF data collection/analysis**

**Aquatic Bioinvasions Research and Policy Institute – Research**

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2003 2004 2005 2006 2007 2008 2009 2010 2011 2012

**MISA**

**TAG**

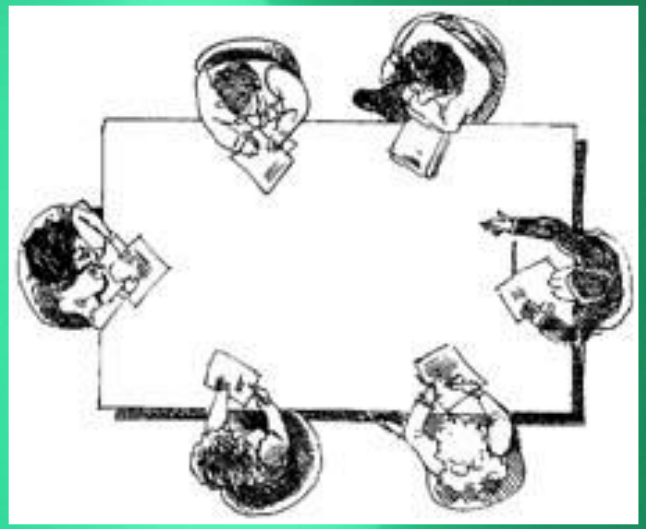
**Report**

**AB740**
**HHRF dev**

**HHRF data collection/analysis**

**Aquatic Bioinvasions Research and Policy Institute – Research**

**Technical Advisory Group**



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Report

AB740
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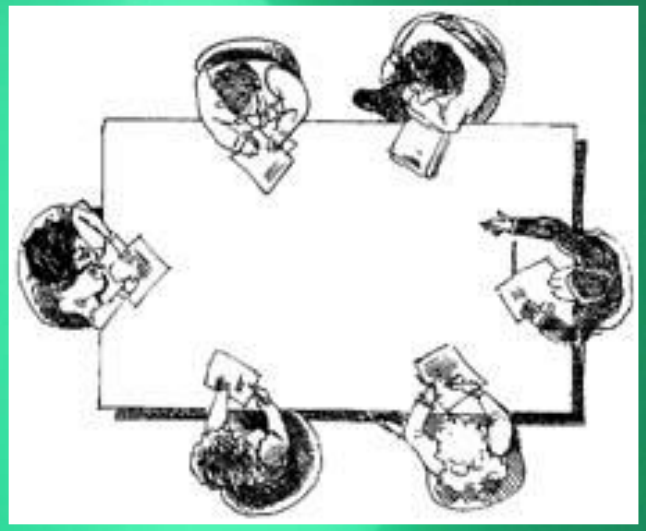
Technical Advisory Group

OAL Rulemaking



California Code of Regulations

# Thank You

For more information:
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